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8 April 69

Harold:

Nichols wired that he will do tests for me, but I am more than glad to have others try them also, especially people with knowledge of ballistics. I shall explain to you all that I would like to see done, although all is not necessary, and some you may not be able to do, because you do not have specialil equipment. Police friends may be able to do it.

I urge you not to write on this until you read my full report, which I have just begun writing in anticipation of test results. Even with minimal tests, I can make a solid, unassailable, case. I can do it on the basis of the ~~dxaxkx~~ dents and on the basis of the absemce of identifiable markings on the brass bases of the cases. Independently of one another, both phenomena prove the same thing-- that is, I can prove it simply on the basis of one or the other.

If you are rushed to write on this, please send me your stuff first. The path of this issue is strewn with broken glass, and if you slip, you will be badly cut. From what you say, I think you understand the issue, but I want to be assured that you do not give them even the shadow of a dream of an error on which they can hang criticism (I think of one "review" of Meagher's book. With all the magnificant material that she cites, the reviewer discussed only her ~~xxxxxxxxxxxxxxxxxxxx~~ unfounded speculation about the size of the rifle in the photos of "LHO" with rifle and revolver. It was dreadful, not of her, but of the reviewer, whose cruddy name I cannot recall.

Here is what to do:

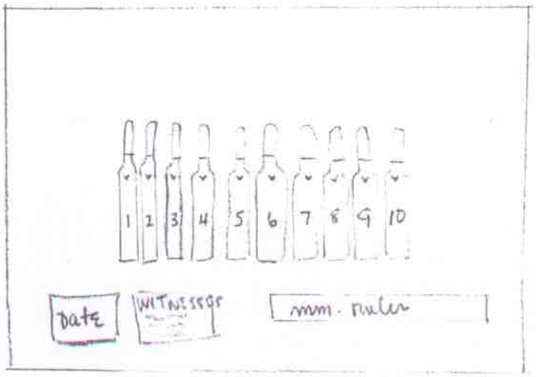
1) Test the manner in which the dents occurred.

A) For CE 544/545 (dented shoulder) (since they are the same, I refer to them as one cartridge case)--- Thrust at least ten ~~xxxxxx~~ bulleted cartridges from the clip into the chamber. Do this vigorpusly, with as force as is required to produce shoulder dents like the ones on CE 544/545. If you fail to produce dents, try loading the clip with more or ~~xxxx~~ fewer cartridges than you used in the test that failed.

Photograph ~~xxxxxx~~ representative dented cartridges before firing. Phitdgraph at least 3 in a row in the same photo, as many as 10, if you can. Clearly number each cartridge *consecutivejy; use a good marking pen with ink that contarast with the brass. ~~xxxx~~ Write the ndmbers clearly on the brass on the same side as the dents, and photograph. ~~Xxx~~ Put a clearly marked millimeter ruler in the picture; ~~xxx~~ perhaps even a small card noting the date when the picture was taken. The pHoto should look something like this:

~~NUMBER THE CARTRIDGES~~

IF YOU NUMBER THE CARTRIDGES BEFORE CHAMBERING, PLACE THEM IN THE CLIP WITH THE ~~NUMBER DOWN~~ NUMBER DOWN, SO THAT THEY WILL BE DENTED ON THE SAME SIDE AS THE NUMBERS.



Actually, you should photograph the unnumbered* cartridges* before loading, too--i.e., before denting. Also, if possible, get a card with witnesses' signatures in the photo, too.

Be sure to photograph the cartridges against ~~xxxxxx~~ an even, contrasting background.

* unnumbered, you will will not know on which side to write the number until after you have produced the dents.

B) For CE 543 (dented case mouth): Manually remove the bullets from at least ten cartridges, ~~Numberxxthemostxthexunbulleted~~ and pour out the propellant powder. Photograph as described below. Thrust the unbulleted cartridge cases from the clip into the chamber with sufficient vigor accurately to ~~xx~~produce ~~dentsxlike~~ dents like the one on the case mouth of CE 543. Mark the cases with consecutive ~~numbers~~ LETTERS, as in the instance described above. Then photograph.

USE LETTERS (A, B, C, ETC.) TO DISTINGUISH CE543 TEST FROM CE544/545 TEST

Photo 1): Before chambering the unbulleted cartridge cases, set them up in the ~~mannerxdescribx~~ same manner as for CE 544/545, except in this instance, you should tilt the cartridge cases shightly, so that you photograph the round contours of the case mouths. Do not photograph from directly over the cases, nor from directly to the side. Tilt the cases sufficiently so that the round contour of the mouths is clearly evident. ~~[illegible]~~)

Photo 2): After chambering the unbulleted cartridge cases, number each case consecutively, and photograph them in the manner described above.

2) Test the manner in which the dents on the shoulder of CE 544/545 are removed.

Place each unfired cartridge manually (i.e., not from the clip) into the chamber. Clase the bolt over the cartridge and fire it. ( Here is a way to be assured that the chamber pressure is consistent from shot to shot: ~~Fire~~ During the tests, fire the bullets into a target at least 75 yards away. If the bullets strike the target reasonably close to one another, say within a 5-inch circle at 75 yards, then the pressures are constant. Do not be concerned with the alignment of the sight, for you need not hit the aiming point; all you need is for the bullets to strike reasonably close to one another. If you have this done, be sure that the marksman uses the same aiming point for each shot, regardless of ~~where~~ where the bullets strike-- you want consistency, not accuracy. This check of chamber pressure is not necessary, unless you think that some underloading or impotent powders may occur).

Photo: Line the fired cases so that the numbers are evident on the side where the dents had been (these numbers should have been present on the cases before you fired them, for you photographed the numbers ~~andxdents~~ and dents in Test #1, above.) It may be advisable, both in this photo and in the one ~~to~~ taken before firing, to place a small mirror under the cartridge cases, so that you can see the ~~unfiredxandxfired~~ condition of the primers in both ~~xxxx~~ instances.

3) Test the firing of primers ~~xxx~~ in unbulleted, unfired cartridge cases~~xforxthis~~:

A) Use ~~atxleast~~ five of the ten unfired cartridge cases whose case mouths you have dented in Test #1.B. Place each manually into the chamber, and fire.

Photo: Photograph the bases of the cartridge cases so that

(PHOTOGRAPH THESE WITH THE CASES IN PHOTO #2 [illegible] BELOW you photograph the fired primers, the letters written on the side of the cartridge~~s~~ cases, and (with a mirror) the dented case mouths.

B) Use five unfired cartridge cases. Manually remove the bullets from five unfired cartridges, and pour out the powder. Manually (not from the clip) insert each into the chamber, close the bolt over the unbulleted cartridge, and fire.

THIS IS A CONTROL

Photo 1: Photograph the unfired cartridge cases so that you can see the unfired primers and ~~the~~ whatever designations you have marked on the sides of the cases (we have already used numbers and letters; what's left?) TRY AA, BB, etc.

Photo 2): Same setup as above; photograph the dented primers and the written designations.

The ballistic testing is easy, and will take you little time and trouble. The photographing will be the bother. You know what facilities you have, so you determine what is necessary; I have described everything that is useful. Not all of it is necessary if you have good witnesses.

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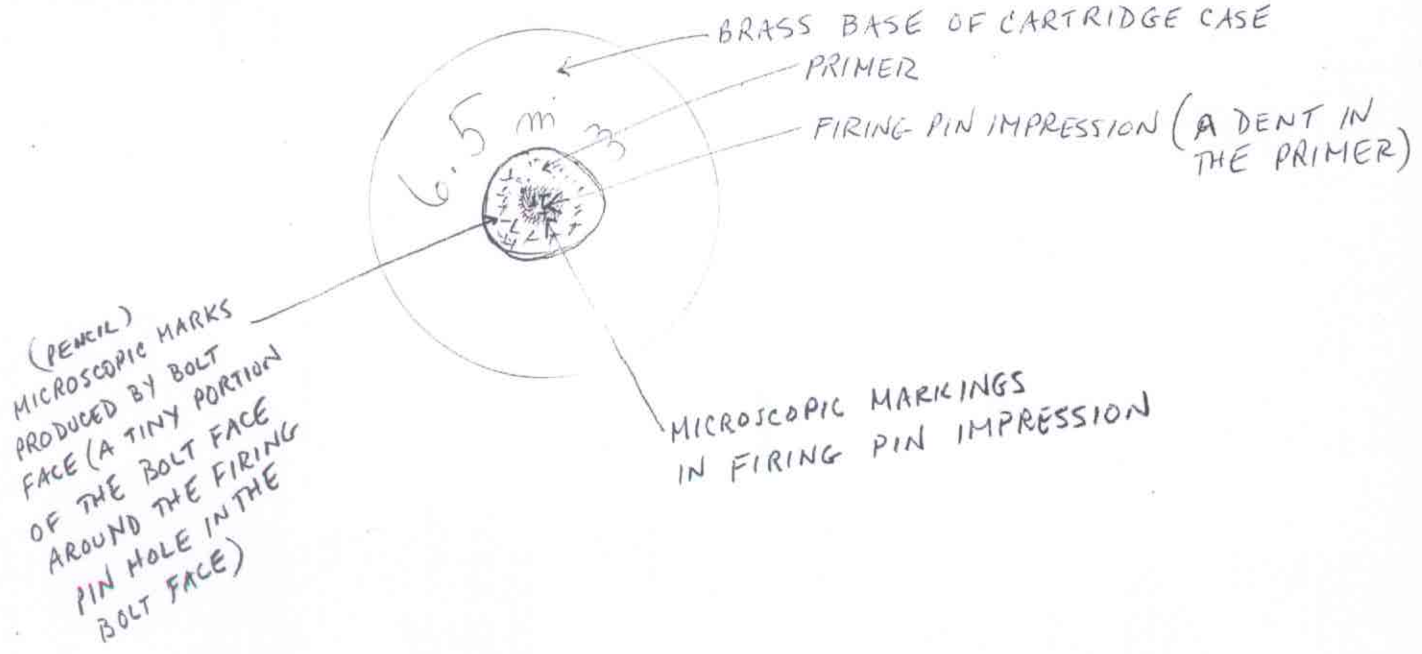
What I now describe requires specialized equipment and and specialist to handle it. I'll describe things as though you had these facilities.

What is needed is a comparison microscope, a firearms identification expert who can interpret microscopic marks, and equipment for photograpghing what the comparison microscope sees.

Here is the issue in question. Frazier observed microscopic marks on the primer of the cartridge case (I am using one instance to apply to all three):1) marks produced by the bolt face of the M-C rifle on the portion of the primer outside the firing pin impression. When the tip of the firing pin rammed the primer, the primer exploded and expanded like a tiny baloon. The primer pressed against the edges of* the firing pin hole in the bolt face-- a minuscule surface; 2) the marks produced by the firing pin in the firing pin impression on the primer.

*see CE558

Illustration:


BRASS BASE OF CARTRIDGE CASE
PRIMER
FIRING PIN IMPRESSION (A DENT IN THE PRIMER)
6.5 mm
(PENCIL) MICROSCOPIC MARKS PRODUCED BY BOLT FACE (A TINY PORTION OF THE BOLT FACE AROUND THE FIRING PIN HOLE IN THE BOLT FACE)
MICROSCOPIC MARKINGS IN FIRING PIN IMPRESSION

Frazier said that the brass of the base bore no marks that allowed him to associate the rifle with the cartridges; he testified only with respect to the marks on the primers, which occurred in the manner that I just described. The point is this (i.e., this is what you should test and affiem by consultation with an honest expert): It is not possible for bulleted cartridge cased to escape being significantly marked on the brass base by the bolt face of the rifle. I would say that it is hardly possible even for modern rifles of the highest quality, brand new, with bolt faces as smoothe as glass; for a clunker like the M-C, whose bolt face looks like it had been milled with an old shit-shovel, impossible, impossible, impossible. That is not a very scientific way of stating it, but it describes how I feel about this, how my knowledge of guns causes me to feel.

Have your expert do this, if he must test. Compare the cases that had fired bullets with the cases that were empty when their primers were blasted. He will know what photograph to take in order to illustrate the point.

Do not be confused, by the way, by bolt face marks which are produced by other means than firing. The bolt face will mark the brass base (probably near the rim) when it pushes the case into the chamber; the extractor will mark the rim of the base; other things, too.

Only three or four identifiable marks on the brass base are sufficient for positive identification (probabilities of accidental similarities are reduced by consideration of the location of a few marks with respect to one another, by size, shape, deapth, contour). The M-C bolt face should produce hundreds of marks-- thousands, maybe. There are bound to be differences, but even a few exact similarities are sufficient.

Enough for now.

I may send you portions of my report on this as I write it. I expect that I shall refer succinctly to tests, and include an appendix describing the test procesures and results in detail.

I expect this to be a good and important paper, and I may wish to copyright it to guard it against misuse by sycophants (Schoener reported to me a disagreeable instance with Josiah Thompson). I have no publishing contacts and don't know who would be interested. Please think about it. Perhaps we could make it a joint venture, with you checking my text and you providing the appendix and photos. Presently I plan to deal only with questions for which I can provide definite answers-- stuff related only to the dents and absesce of markings on brass bases.

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Evidence that the cases were loaded more than once is somewhat misleading-- especially with respect to terms. Different methods of chambering produce different marks. The dents were caused only bu thrusting the cartridge from the clip into the chamber. Manual chambering (dropping the cartridge by hand into the chamber) does not prevent cartridge bases from being marked by the extractor as the bolt presses the cartridge (or case) into the chamber. The number of times the bolt closes over a cartridge has nothing to do with the number of times the cartridge was thrust in from the clip. There are many variable, so be careful.

One more thing regarding photographs. I don't know whether this is possible, but if it is, please do it. Consult my Exhibits 3 and 4 showing how the dents occurred. You should be able to look down into the magazine from the top and see ~~khxxxxpxxxikixx~~ the cartridges in those positions. If it looks suitable for informative photographs, take pictures of them in the rifle being chambered. You can set it up merely by stopping the action of the bolt, and not by trying to photograph while the bolt is thrusting the cartridge forward. Movie frames are best, of course.

I don't need photographs, really (I hardly feel as if I needed tests, I'm that sure), so you determine what you think is best in that regard.

Still,

Dick

Bernabei